

What is claimed is:

1. An apparatus for mounting a tire condition sensor capsule to a wheel rim, the apparatus comprising:

a housing having a receptacle having a shape complementary to the capsule to receive the capsule snugly therein;

a lock on said housing, cooperating with a surface on the capsule to lock said housing to the capsule; and

a connector for connecting said housing to the wheel rim such that the capsule is between a portion of the wheel rim and said receptacle.

2. The apparatus of claim 1 wherein said housing comprises a wall.
3. The apparatus of claim 2 wherein said lock is on said wall.
4. The apparatus of claim 3 wherein said wall has first and second spaced apart side portions between which the capsule is received.
5. The apparatus of claim 4 wherein said lock is on at least one of said first and second side portions.
6. The apparatus of claim 4 wherein said lock includes first and second clips on said first and second side portions respectively.
7. The apparatus of claim 4 wherein said first and second side portions have first and second edge extremities respectively.

8. The apparatus of claim 7 wherein said lock includes first and second clips on said first and second edge extremities respectively, said first and second clips being operable to cooperate with the capsule to lock said housing to the capsule.

9. The apparatus of claim 8 wherein said lock further includes third and fourth clips spaced apart from said first and second clips respectively, on said first and second edge extremities.

10. The apparatus of claim 2 wherein said wall has a weight reducing void therein.

11. The apparatus of claim 2 wherein said wall has first and second spaced apart side portions between which the capsule is received and wherein said wall has an intermediate portion extending between said first and second side portions.

12. The apparatus of claim 11 wherein said intermediate portion has a weight reducing void therein.

13. The apparatus of claim 11 wherein said intermediate portion has first and second spaced apart weight reducing voids therein.

14. The apparatus of claim 11 wherein said wall includes first and second end portions extending from said intermediate portion, the capsule being received between said first and second side portions and said first and second opposite end portions.

15. The apparatus of claim 14 wherein said first and second wall portions are wider than said first and second end portions such that said first and second end side portions completely cover respective side

portions of the capsule and such that said first and second end portions only partially cover respective end portions of the capsule.

- 5 **16.** The apparatus of claim **14** wherein said connector includes first and second fastener receivers molded into said first and second end portions of said housing.
- 10 **17.** The apparatus of claim **2** wherein said wall has first and second side portions having first and second edge extremities respectively, said first and second edge extremities having first and second contact surfaces respectively for contacting the wheel rim.
- 15 **18.** The apparatus of claim **17** wherein said contact surfaces have a concave shape complementary to the shape of the wheel rim.
- 20 **19.** The apparatus of claim **2** wherein said housing is rigid.
- 25 **20.** The apparatus of claim **2** wherein said housing is formed of injection molded plastic.
- 30 **21.** The apparatus of claim **2** wherein said connector includes first and second fastener receivers on first and second end portions of said housing.
- 25 **22.** The apparatus of claim **2** wherein said connector includes a valve stem connector operable to cooperate with a valve stem of the wheel to secure said housing to the wheel rim.
- 30 **23.** The apparatus of claim **22** wherein said valve stem connector comprises a valve stem receptacle in said housing for receiving a portion of the valve stem.

24. The apparatus of claim 23 wherein said connector further comprises an opening in said housing, in communication with said valve stem receptacle, for receiving a fastener operable to fasten said valve stem in said valve stem receptacle.

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25. The apparatus of claim 2 wherein said connector comprises a strap holder operable to cooperate with a strap that extends around the wheel to secure said housing to the wheel.

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26. The apparatus of claim 25 wherein said housing is formed of injection molded plastic.

27. The apparatus of claim 26 wherein said strap holder is formed in said housing.

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28. The apparatus of claim 27 wherein said strap holder includes first and second slots formed in said housing, said slots being operable to receive the strap.

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29. The apparatus of claim 25 wherein said wall has first and second opposite end portions, said strap holder comprising first and second openings in said first and second end portions respectively, for receiving the strap.

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30. A method for mounting a tire condition sensor capsule to a wheel rim, the method comprising:

receiving the capsule in a housing having a receptacle having a shape complementary to the capsule;

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locking the capsule in said housing; and

connecting said housing to the wheel rim such that the capsule is between a portion of the wheel rim and said receptacle.

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31. The method of claim **30** wherein receiving comprises receiving the capsule between first and second side portions and first and second end portions of a wall of said housing.
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32. The method of claim **31** wherein locking comprises engaging a clip on said housing with a surface on the capsule.
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33. The method of claim **30** wherein connecting said housing to the wheel rim comprises fastening first and second end portions of said housing to corresponding mounting surfaces on the wheel rim.
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34. The method of claim **30** wherein connecting said housing to the wheel rim comprises receiving a portion of a valve stem of the wheel rim in said receptacle in said housing.
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35. The method of claim **34** wherein connecting said housing to the wheel rim comprises fastening said portion of a valve stem of the wheel rim in said receptacle in said housing.
36. The method of claim **30** wherein connecting said housing to the wheel rim comprises engaging a strap extending around the wheel rim with openings in said housing.
37. An apparatus for mounting a tire condition sensor capsule to a wheel rim, the apparatus comprising:

30 means for holding and protecting the capsule;

means for locking the capsule in said means for holding and protecting; and

means for connecting said means for holding and protecting to the wheel rim such that the capsule is between said means for holding and protecting and the wheel rim.

38. The apparatus of claim 37 wherein said means for holding comprises a receptacle for receiving the capsule.
39. The apparatus of claim 37 wherein said means for locking comprises a clip on the means for holding and protecting, said clip being operable to engage a surface of the capsule.
40. The apparatus of claim 37 wherein said connecting means includes first and second fastener receivers on said means for holding and protecting.
41. The apparatus of claim 37 wherein said connecting means includes a valve stem connector operable to cooperate with a valve stem of the wheel to secure said means for holding and protecting to the wheel rim.
42. The apparatus of claim 37 wherein said connecting means comprises a strap holder operable to cooperate with a strap that extends around the wheel to secure said means for holding and protecting to the wheel rim.
43. The apparatus of claim 37 wherein said means for holding and protecting comprises a housing having a receptacle for receiving the capsule.
44. A tire condition sensing system operable to be mounted to a wheel rim, the system comprising:

a tire condition sensor capsule containing an electronic circuit for measuring a tire condition and for transmitting a signal indicative of said condition to a remote receiver;

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a housing having a receptacle having a shape complementary to said capsule to receive said capsule snugly therein;

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a lock on said housing, cooperating with a cover of said capsule to lock said housing to said capsule; and

a connector for connecting said housing to the wheel rim such that said capsule is between a portion of the wheel rim and said receptacle.

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45. A tire condition sensing system, the system comprising:

a wheel rim;

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a tire condition sensor capsule containing an electronic circuit for measuring a tire condition and for transmitting a signal indicative of said condition to a remote receiver;

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a housing having a receptacle having a shape complementary to said capsule to receive said capsule snugly therein;

a lock on said housing, cooperating with a cover of said capsule to lock said housing to said capsule; and

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a connector for connecting said housing to the wheel rim such that said capsule is between a portion of the wheel rim and said receptacle.

46. A method of enabling measurement of a tire condition, the method comprising:

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installing on a vehicle a wheel to which is secured a housing having a receptacle in which a tire condition sensor capsule containing a tire condition sensor and signal transmitter is removably locked by a locking mechanism engaged with said capsule.

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